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The Role of Commodity Futures and Options in Hedging Vs Investment Strategies in the Indian Commodity Market

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1. Abstract

Gold plays a very important role in India, though its prices are very volatile posing a great risk to the jewellers, the refiners, exporters, and the gold-loan institutions. The commodity gold futures in MCX are used to deal with this volatility and at the same time, the traders invest and speculate with it. Although these are important, there is a lack of research on the topic of gold futures as an investment and hedging instrument in the Indian context. This paper fills that gap by examining the participation of selected companies in gold futures, that is, Titan Company Ltd., Kalyan Jewelers, Rajesh Exports and Muthoot Finance. Through secondary data and descriptive and quantitative type of analysis, the research will seek to illuminate the dual purpose of the gold futures and present an insight on the companies, policy makers, and other market players.

2. Introduction

This study will look at how the Indian commodity derivatives market has evolved and the effectiveness of the market and how gold as a key financial and cultural asset has expanded. Although gold is one of the key domestic savings tools and an inflationary hedge in India, its sharp price fluctuation, which is influenced by international demand, exchange rates, and political conflicts, requires the effective risk management systems. This paper examines the two functions of futures and options in the exchanges such as the MCX and how they are used to hedge against participants such as jewellers as well as provide investment opportunities to traders. The research will fill the gap in the current literature by examining the relationship between market liquidity, the regulatory role of SEBI, and the price discovery process of these derivative instruments with a simultaneous implication resulting in risk mitigation as well as the wealth creation of the Indian gold market, in particular.

3. Theoretical Framework

This theoretical basis of the proposed study is based on the Efficient Market Hypothesis (EMH) and Modern Portfolio Theory (MPT) according to which the price of gold derivative should re-

flect all available information and offer the diversification effect. Moreover, the Hedging Theory, namely, the Keynes-Hicks theory of normal backwardation is used to examine the transfer of risk between hedgers and speculators involved in gold futures and options. This framework also uses Price Discovery Theory to assess the relationship of lead lag between gold derivative markets and physical spot market to have a complete picture of how information efficiency and risk premium affect the conduct of the people in the Indian gold segment.

4. Literature Review

A study about Indian gold derivatives puts emphasis on the two functions of risk management and wealth creation. Gupta et al. (2017) and Pani (2022) assert that the gold futures in the MCX have been known to have high liquidity and efficient price discovery that frequently dominates the spot prices. Although Nair (2018) and Sethi Jewellers (2023) propose that options provide jewellers with different downside protection and upside potential, they cite that their usage is hindered by high premiums and reduced liquidity over futures. Gold derivatives as an investment opportunity is better diversified (Tripathy, 2019), and according to Kanamura (2018), they offer considerable diversification during periods of economic turmoil. Nevertheless, there is still a knowledge gap concerning how all these instruments simultaneously promote price discovery and risk reduction, and thus, a more complex study of the gold segment is necessary.

5. Research Gap and Hypothesis

A majority of researches done on the Indian gold market only examine the relationship between the spot and futures without considering the option. Recent data on the after 2016 period, in particular, the sharp fluctuations in the COVID-19 period, and there are few studies that compare hedging efficiency of futures with the speculative use of options. The interplay between gold futures and options in India has not been properly researched and this gives an opportunity of new research that would analyse the two financial instruments. Based on the identified gaps the study proposes:

- H1: The relationship between futures of gold and spot prices is high and positive with futures mainly used as a hedge.
- H2: Gold futures are more effective in terms of hedging than gold options.
- H3: Gold options are used more for speculative and investment purposes than for hedging.
- H4: Futures and options are different in terms of their effectiveness based on the difference in pricing behaviour and market structure.

6. Contributions of Study

This research is relevant because it is a current and specific analysis of the relationship between price, gold spot, and future with the conductive aspect of the option in the Indian market compared to past studies. Although so far, the most important research on futures is focused on the hedging of futures, the given paper provides the contribution to the research demonstrating that futures and options can vary in their performance on MCX, with futures demonstrating the great efficiency and hedging potential, and options presenting the trends of speculative trading activity. The investigation of monthly gold prices in 2016-2025 singles out the influence of futures on the spot prices despite the high volatility price due to COVID-19 and the option premiums and strike preference show the expectations of investors and the short-term trading patterns. These lessons can be used to elucidate the various derivatives and their usage to meet

various market demands and provide viable ideas to hedgers, traders, and policymakers.

7. Research Design

1. Research Approach- The present research is quantitative and descriptive research method to determine the relationship between the price of gold spot and futures and also includes a qualitative evaluation of the gold options. It is about the knowledge of the role of futures in satisfying hedging requirements and the use of options in mirroring a behaviour of speculation or investment in the Indian derivatives market.
2. Data Source and Period-The study is based on secondary monthly data provided by MCX, the period of which is 2016-2025. The data will consist of the gold spot prices, near-month futures prices and qualitative information on the option premiums, strike preferences, and common trading activities based on the market reports.
3. Tools of Analytics- Time-series trend analysis is applied to investigate the long-term trend of price, whereas correlation measures strength of the spot-futures relationship. Simple linear regression is a measure of hedging potential and pricing efficiency. Options activity qualitative review assists in comparing the operational role of futures and options to the behaviour of the market.
4. Procedure and Purpose-Data was cleaned, aligned, and analysed in excel by visual charts, statistical calculations, and interpretation of comparison. This is to analyse the effectiveness of gold futures in hedging price risk and to be able to know the differences between the use of options with the main point indicating how derivatives are utilized in terms of hedging or to speculate.

8. Data Analysis and Findings

According to the analysis of the gold spot and futures prices in the period of 2016-2025, the linkage of the Indian market is very strong and consistent. The time-series graph reveals that both price series vary almost the same during the key events such as the COVID-19 spike indicating low basis risk and high hedging potential which proves H1. The regression findings, Futures = 1.002xSpot - 80.94 and an R2 of 0.9983 confirm that the price of futures and the price of spot price are almost identical, which supports the stronger hedging ability of futures (supports H2). The 0.999 correlation further brings out the pricing efficiency of gold futures and their reliability as a risk management instrument. Conversely, qualitative, and empirical observations in the market of the gold options indicate that options are primarily employed to engage in short run speculations and directional bet because of fewer capital requirements and fewer downside risks. Hedgers do not often deal with options due to premiums and complexity of the strategy, which can be used to support H3. The difference in behaviour between futures (hedging-based) and options (speculation-based) shows that the two instruments are quite different in effectiveness as they exclude an area based on their pricing, liquidity, and market structure, which help to prove H4.

9. Conclusion

The research concludes that, gold futures in India, are very highly priced and they closely follow the underlying spot market and therefore are very useful in hedging. The regression and correlation outcomes reveal almost a perfect co-movement whereas the trend of time series proves to be stable throughout significant global occurrences. On the contrary, gold option is applied to speculative and short-term investment based on lesser capital requirements and pay-

off structures flexibility. In general, all results allow concluding about the definite difference in the functions: futures are used to hedge, options are to speculate, which strengthens the position of each type of derivative in the Indian gold market.

10. Limitations

The research had solely used secondary data provided by MCX, and this might have some slight variations in reporting. The monthly data was employed, and it lacks volatility and intra-day price movements in the short term. It is analysed based on simple correlation and linear regression, but no further sophisticated econometric models are applied. As well, the qualitative analysis of options is conducted in terms of overall market behaviour, as opposed to quantitative option-chain information.

11. Scope for Future Research

One can use daily/intraday prices to examine volatility patterns in a more detailed manner. The advanced models such as GARCH or cointegration tests can also be used by the researchers to examine long-term equilibrium, as well as volatility spillovers. Further quantitative analysis of unit of the gold option-chain data, including implied volatility, open interest and premium behaviour, can help shed more light on how an option works compared to futures.

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